

GUIDANCE OF TREATMENT DEVICES ON TARGET SURFACES

[0001] The present invention relates to guided positioning of a surface treatment device in spaced relation to a target surface, such as the hull of a ship.

STATEMENT OF GOVERNMENT INTEREST

[0002] The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefore.

BACKGROUND OF THE INVENTION

[0003] Ship hulls and other large surfaces are traditionally painted manually using power spray guns and involving for example scaffolding and over-spray protection during a relatively inefficient coating process. Such surfaces are also treated for removal of paint therefrom, involving discharges of grit or water under high pressures from de-paint devices attached to manipulating facilities requiring use of additional labor and materials. Patent protection was heretofore provided for surface attachable guidance apparatus and method for different devices, to the exclusion of coating of vertical surfaces such as ship hulls with paint. It is therefore an important object of the present invention to provide for efficient transfer of coatings such as paint to and from surfaces such as ship hulls.

SUMMARY OF THE INVENTION

[0004] In accordance with the present invention rail track guidance facilities are attachable to a target surface, such as a ship hull, for establishment of horizontal and vertical guide paths in spaced relation to the target surface along which a guide support for a surface treatment device is displaced to plural locations at which the treatment device is positioned preferably along an ejection axis aligned perpendicular to the target surface so as to perform paint coating or de-coating operations with maximized efficiency.

BRIEF DESCRIPTION OF DRAWING

[0005] A more complete appreciation of the invention and many of its attendant advantages will be readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawing wherein:

[0006] FIG. 1 is a side elevation view of a guidance support apparatus for treatment of a target surface to which the apparatus is attached;

[0007] FIG. 2 is a front view of the apparatus shown in FIG. 1 as viewed from section line 2-2; and

[0008] FIGS. 3, 4 and 5 are partial sections taken substantially through planes 3-3, 4-4 and 5-5 in FIG. 2.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0009] Referring now to the drawing in detail, FIG. 1 illustrates a guidance assembly, generally referred to by reference numeral 10, through which movement of a surface treatment device 12 is selectively controlled in spaced relation to a vertical target surface 14 to which the guidance assembly 10 is removably attached at different locations. As shown in FIG. 1, the surface treatment device 12 is in the form of a pressurized paint spray ejection nozzle connected to a paint supply 16. A spray 18 of liquid paint is accordingly shown ejected from the ejection nozzle type treatment device 12 so as to paint the target surface 14, which may be on the exterior of a ship hull 20 on which a pair of fixed guide rails 22 of the guidance assembly 10 are attached in parallel spaced relation to each other. A pair of vertical rail guide supports 24 are associated with the guidance assembly 10 as shown in FIGS. 1 and 2. Upper and lower arms 26 and 28 extending from the vertical supports 24 are slidably received in the guide rails 22 for guided displacement of the supports 24 relative to the vertical target surface 14 in a horizontal direction. As shown in FIGS. 2 and 5, the vertical guide supports 24 are interconnected and held in horizontally spaced relation to each other by a pair of horizontal support rails 30 having end sections 32 slidably received within vertical guide slots 34 formed in the guide supports 24.

[0010] Also associated with the guidance assembly 10 as shown in FIGS. 1, 2 and 4 are a pair of vertical rack supports 36 having upper and lower arm sections 38 slidably received within the support rails 30. A rectangular rack plate 40 is angularly positioned on pivot pin 42 between the rack supports 36 so as to be preferably aligned perpendicular to the target surface 14 as shown in FIGS. 1 and 4.

[0011] It will be apparent from the foregoing description that the treatment ejection device 12 positioned on the rack plate 40 at each of a plurality of locations along the support rails

30 and guide slots 34 in perpendicular alignment with the target surface 14 as shown in FIGS. 1 and 4 so as to apply the spray 18 to the surface 14 between the supports 24 and the upper and lower surface guide rails 22 with maximized surface treatment. A portion of the surface 14 between the horizontal rails 22 and the vertical supports 24 may thereby be efficiently and completely treated. The vertical supports 24 may be shifted horizontally along linear paths on the rails 22 to sequentially cover other portions of the surface 14 during a treatment process. The horizontal guide rails 22 may be removably attached to the surface 14 are furthermore shifted to other locations on the surface 14 for treatment purposes to thereby cover the entire surface 14 to be treated.

[0012] Obviously, other modifications and variations of the present invention may be possible in light of the foregoing teachings. It is therefore to be understood that within the scope of the appended claims the invention may be practiced otherwise than as specifically described.

What is claimed is: